

Notice of Allowability

Application No.

10/038,561

Examiner

Mark Ruthkosky

Applicant(s)

ODGAARD ET AL.

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/27/2004.
2. ☒ The allowed claim(s) is/are 1.
3. ☒ The drawings filed on 27 May 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Mark Ruthkosky 6/13/04
Mark Ruthkosky
Primary Patent Examiner
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DETAILED ACTION

Drawings

The drawings filed on 5/27/2004 are approved.

Claim Rejections - 35 USC § 102/103

Claim 2, rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Surampudi et al (US 5,599,638), has been canceled.

Allowable Subject Matter

Claim 1 is allowed.

The following is an examiner's statement of reasons for allowance:

The instant claims are to a method of making a membrane electrode assembly for use in a direct methanol fuel cell. The method comprises the steps of serigraphically printing a cathode carbon backing layer onto graphite or carbon paper; boiling the printed carbon backing layer and graphite or carbon paper; serigraphically printing a carbon cathode catalyst onto the boiled, printed carbon backing layer and graphite or carbon paper to produce a cathode layer; boiling the cathode layer; serigraphically printing an anode carbon backing layer onto graphite or carbon paper; boiling the printed anode carbon backing layer and graphite or carbon paper; serigraphically printing a carbon anode catalyst onto the boiled, printed anode carbon backing layer and graphite or carbon paper to produce an anode layer; boiling the anode layer; inserting a polymer electrolyte

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membrane between the boiled cathode layer and the boiled anode layer and placing the membrane and the cathode and anode layers into a constraint which restricts volume and lateral deflation; and semi-isostatically compressing the membrane and cathode and anode layers into a membrane electrode assembly. The instant application shows boiling the materials throughout the specification.

The prior art does not teach a method of making a membrane electrode assembly wherein a serigraphically printed cathode/anode carbon backing layer on graphite or carbon paper is boiled followed by serigraphically printing a carbon cathode/anode catalyst onto the boiled, printed carbon backing layer and graphite or carbon paper to produce a cathode/anode layer and boiling the cathode/anode layer. The process of boiling the materials after each step is not taught in the prior art. The most pertinent prior art includes Surampudi et al (US 5,599,638), which teaches a membrane electrode assembly used in direct methanol fuel cells (column 3.) The electrode includes a mixture of high surface carbon particles added to carbon paper followed by the addition of a catalyst (col. 14, lines 30-45.) The catalyst may be supported or unsupported (col. 7, lines 30-67.) Following the addition of catalyst, the electrode is washed with deionized water (col. 15, lines 10-25.) The reference does not teach a method of making a membrane electrode assembly wherein a carbon backing layer on graphite or carbon paper is boiled followed by printing a carbon cathode/anode catalyst onto the boiled, printed carbon backing layer and graphite or carbon paper. As the method is not taught in the prior art, the claims are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky 6/13/04

Mark Ruthkosky

Primary Patent Examiner

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